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EXAMINER	
BELANI, KISHIN G	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/784,230	LEE ET AL.	
	Examiner	Art Unit	
	Kishin G. Belani	2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of foreign priority papers submitted on 04/14/2004 under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness
or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3, 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Turner (U.S. Patent Application Publication # 2003/0152049 A1**), in view of **Grilli et al. (U.S. Patent Application Publication # 2004/0037245 A1),** and further in view of **Yao (U.S. Patent Publication # 6,731,647 B2).**

Consider **claim 1**, Turner shows and discloses a system in a mobile network for High Rate Pack Data (HRPD) communication for transmitting packet data when inter-system handoff occurs between the mobile network for HRPD communication and a mobile network for voice communication (Abstract; Fig. 1; paragraph 0010 that discloses a system in a mobile network including base station (BS) 106, Wireless Communication Device (WCD) 102, and a computer/client 104, connected to Network 108 that is linked to voice communication system 110, and HRPD communication 112; the described system being capable of inter-system handoff between a voice network and a high packet rate data network), said system comprising:

a hybrid mobile terminal capable of communicating with both the mobile networks (Mobile terminal WCD 102 shown in Fig. 1 and described in paragraphs 0010 and 0041-0043); and

a Packet Control Function (PCF) system for receiving packet data for transmission to the hybrid mobile terminal (Fig. 1, Base Station BS 106; paragraph 0044 that details the functions of the base station, including receiving packet data for transmission to the hybrid mobile terminal); and

receiving a link release message from the access network (paragraph 0154 which discloses that PCF receives a link release message from WCD 102 shortly before turning away to the voice network IS-2000, to ensure that IS-856 network will not transmit packets to WCD 102 in the time that the access terminal is unavailable to receive them).

However, Turner does not disclose dividing the received packet data to create Generic Routing Encapsulation (GRE) packet data, storing the GRE packet data, together with a GRE packet key, in an active queue, transmitting the GRE packet data to an access network, and storing packet data stored in the active queue in a dormant queue when receiving a link release message from the access network.

In the same field of endeavor, Grilli et al. show and disclose a system for wireless communication, wherein the received packet data are divided to create Generic Routing Encapsulation (GRE) packet data, the GRE packet data are stored, together with a GRE packet key, in an active queue, and transmitted to an access network (Fig. 1 that shows a wireless communication system with a Packet Control Function (PCF)

108(1-3); Fig. 2 that shows divided packets 204(A), 204(B) and 204(C); paragraph 0047, lines 22-24 which disclose that the content of an HSBS channel is formatted into packets comprising a payload and a header 208, as shown in Fig. 2 for each packet, the header including a packet key (BSR_ID); Fig. 5 that shows the layout of a transmit buffer where the packets are saved sequentially prior to transmission to the access network; paragraph 0050, lines 6-11 disclose the same details).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a Packet Control Function, wherein the received packet data are divided to create Generic Routing Encapsulation (GRE) packet data, and the GRE packet data are stored, together with a GRE packet key, in an active queue, and transmitted to an access network, as taught by Grilli et al., in the wireless mobile network system of Turner, so as to provide proper packet format for wireless transmission of the received data and to provide capability to retransmit data from the queue in which it is stored, in case an interruption in the data transmission occurs.

However, Turner, as modified by Grilli et al., does not disclose storing packet data stored in the active queue in a dormant queue when receiving a link release message from the access network.

In the same field of endeavor, Yao shows and discloses a system for wireless communication, wherein the packet data stored in the active queue are stored in a dormant queue when receiving a link release message from the access network (Fig. 1 that shows a wireless communication system including Base Station Controller 14; Fig. 2 that shows a Secondary Queue 214 with capability to store the same data that is

stored in the Transmit Queue 212, and with an Elapsed Time Device 220 to flush out aged packets; column 10, lines 34-46 and column 12, lines 32-46 which disclose that when the transmitter receives a NAK (Negative Acknowledgement) message from the receiver, identifying any packets that were not received successfully, packet copies held in the dormant queue are retransmitted at least once more).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a Packet Control Function, wherein the packet data stored in the active queue are stored in a dormant queue when receiving a link release message from the access network, as taught by Yao, in the wireless mobile network system of Turner, as modified by Grilli et al., so as to provide capability to retransmit data from the secondary queue in which it is stored, in case an interruption in the data transmission occurs.

Consider **claim 3**, and **as it applies to claim 1 above**, Turner as modified by Grilli et al. and Yao, further shows and discloses the claimed system, including wherein the PCF system transmits packet data for transmission to a mobile terminal, stored in the dormant queue, to the mobile terminal when an air link is established to the mobile terminal (In Yao reference, Fig. 2 that shows a Secondary Queue 214 with capability to store the same data that is stored in the Transmit Queue 212; column 10, lines 34-46 and column 12, lines 32-46 which disclose that when the transmitter receives a NAK (Negative Acknowledgement) message from the receiver, identifying any packets that

were not received successfully, packet copies held in the dormant queue are retransmitted at least once more).

Consider **claim 5**, Turner shows and discloses a method for transmitting packet data in a Packet Control Function (PCF) system when inter-system handoff occurs between a mobile network for High Rate Pack Data (HRPD) communication and a mobile network for voice communication (Abstract; Fig. 1; paragraph 0010 that discloses a system in a mobile network including base station (BS) 106, Wireless Communication Device (WCD) 102, and a computer/client 104, connected to Network 108 that is linked to voice communication system 110, and HRPD communication 112; the described system being capable of inter-system handoff between a voice network and a high packet rate data network), said method comprising the steps of:

receiving packet data for transmission to a hybrid mobile terminal (Fig.1, Base Station (BS) 106 with capability to act as a Packet Control Function (PCF) receiving packet data from data server 112 as well as voice network 110 for transmission to a hybrid mobile terminal WCD 102; paragraphs 0043-0044 that describe the receiving capabilities of the base station 106), and

receiving a link release message from the access network (paragraph 0154 which discloses that PCF receives a link release message from WCD 102 shortly before turning away to the voice network IS-2000, to ensure that IS-856 network will not transmit packets to WCD 102 in the time that the access terminal is unavailable to receive them).

However, Turner does not disclose storing the received packet data, together with a Generic Routing Encapsulation (GRE) packet header, in an active queue provided in the PCF system, and transmitting the packet data to an access network; creating a dormant queue when receiving a link release message including a GRE packet sequence number, and storing packet data corresponding to the GRE packet sequence number, and/or packet data transmitted subsequently thereto, on the created dormant queue.

In the same field of endeavor, Grilli et al. show and disclose a method for wireless communication, wherein storing the received packet data, together with a Generic Routing Encapsulation (GRE) packet header, in an active queue provided in the PCF system, and transmitting the packet data to an access network (Fig. 1 that shows a wireless communication system with a Packet Control Function (PCF) 108(1-3); paragraph 0047, lines 22-24 which disclose that the content of an HSBS channel is formatted into packets comprising a payload and a header 208, as shown in Fig. 2 for each packet, the header including a packet key (BSR_ID); Fig. 5 that shows the layout of a transmit buffer where the packets are saved sequentially prior to transmission to the access network; paragraph 0050, lines 6-11 disclose the same details).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a Packet Control Function, wherein storing the received packet data, together with a Generic Routing Encapsulation (GRE) packet header, in an active queue provided in the PCF system, and transmitting the packet

data to an access network, as taught by Grilli et al., in the wireless mobile network method of Turner, so as to provide proper packet format for wireless transmission of the received data and to provide capability to retransmit data from the queue in which it is stored, in case an interruption in the data transmission occurs.

However, Turner, as modified by Grilli et al., does not disclose storing packet data stored in the active queue in a dormant queue when receiving a link release message from the access network.

In the same field of endeavor, Yao shows and discloses a method for wireless communication, wherein creating a dormant queue when receiving a link release message including a GRE packet sequence number, and storing packet data corresponding to the GRE packet sequence number, and/or packet data transmitted subsequently thereto, on the created dormant queue (Fig. 1 that shows a wireless communication system including Base Station Controller 14; Fig. 2 that shows a Secondary Queue 214 with capability to store the same data that is stored in the Transmit Queue 212, and with an Elapsed Time Device 220 to flush out aged packets; column 10, lines 34-46 and column 12, lines 32-46 which disclose that when the transmitter receives a NAK (Negative Acknowledgement) message from the receiver, identifying any packets that were not received successfully, packet copies held in the dormant queue are retransmitted at least once more, thereby disclosing that such packets were saved in the secondary queue when the handoff occurred).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a Packet Control Function, wherein creating

a dormant queue when receiving a link release message including a GRE packet sequence number, and storing packet data corresponding to the GRE packet sequence number, and/or packet data transmitted subsequently thereto, on the created dormant queue, as taught by Yao; in the wireless mobile network method of Turner, as modified by Grilli et al., so as to provide capability to retransmit data from the secondary queue in which it is stored, in case an interruption in the data transmission occurs.

Consider **claim 8**, and **as it applies to claim 5 above**, Turner as modified by Grilli et al. and Yao, further discloses the claimed method, comprising the step of creating and transmitting by the PCF system, a message for requesting that a service node for performing transmission of packet data to the hybrid mobile terminal to store packet data for transmission and also to switch to a standby state, after storing packet data of the active queue in the dormant queue (In Yao reference, column 12, lines 32-46 which disclose a NAK message being transmitted from the receiver to transmitter, identifying any frames that were not received successfully. The identified frames that were saved in the dormant queue while in the standby mode are retransmitted by the transmitter at least once more).

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Turner (U.S. Patent Application Publication # 2003/0152049 A1)**, in view of **Grilli et al. (U.S. Patent Application Publication # 2004/0037245 A1),** and further in view of **Yao (U.S. Patent Publication # 6,731,647 B2),** and further in view of **Park et al. (U.S. Patent**

Publication # 6,892,071 B2), and further in view of **Chikuma et al. (U.S. Patent Publication # 6,947,435 B1).**

Consider **claim 2**, and **as it applies to claim 1 above**, Turner as modified by Grilli et al. and Yao, shows and discloses the claimed system, except wherein upon receipt of the link release message including the GRE packet sequence number, the PCF system transfers packet data, corresponding to a sequence number appointed by the GRE packet sequence number, from among data for the hybrid mobile terminal stored in the active queue, and/or packet data subsequent to said packet data corresponding to the sequence number, to the dormant queue, and then destroys the active queue.

In the same field of endeavor, Park et al. show and disclose the claimed wireless mobile network system, wherein upon receipt of the link release message including the GRE packet sequence number, the PCF system transfers packet data, corresponding to a sequence number appointed by the GRE packet sequence number, from among data for the hybrid mobile terminal stored in the active queue, and/or packet data subsequent to said packet data corresponding to the sequence number, to the dormant queue (Fig. 5C, event arrows 519, 520 and 522; column 10, lines 10-17 which disclose that when the radio link fails, the source RNC 31 (shown in Fig. 5A) requests the source BTS 21 to release the radio link, whereupon the source BTS 21 transmits a radio link release response message to the source RNC; the rest of the details shown in Grilli et al. and Yao references).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a method for wireless communication, wherein upon detection of loss of an air link with the hybrid mobile terminal, creating a link release message including the GRE packet sequence number of a GRE packet that has not been transmitted to the hybrid mobile terminal, and transmitting the created link release message to the PCF system, as taught by Park et al., in the wireless mobile network system of Turner, as modified by Yao and Grilli et al., so as to release resources for use by others, when the resources are no longer needed.

However, Turner as modified by Grilli et al., Yao, and Park et al. does not disclose a system for destroying the active queue.

In the same field of endeavor, Chikuma et al. show and disclose the claimed wireless mobile network system for destroying the active queue (Fig. 23 that disclose a step for clearing data from buffer after it has been transmitted to the mobile terminal, thereby disclosing destruction of transmitted data from the active queue; column 19, lines 10-13 that disclose the same details).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a system for destroying the active queue, as taught by Chikuma et al., in the wireless mobile network system of Turner, as modified by Grilli et al., Yao, and Parker et al., so as to release the resources that are not needed anymore, freeing them up for reuse somewhere else.

Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Turner (U.S. Patent Application Publication # 2003/0152049 A1**), in view of **Grilli et al. (U.S. Patent Application Publication # 2004/0037245 A1),** and further in view of **Yao (U.S. Patent Publication # 6,731,647 B2),** and further in view of **Park et al. (U.S. Patent Publication # 6,892,071 B2).**

Consider **claim 4**, and **as it applies to claim 1 above**, Turner as modified by Grilli et al. and Yao, further shows and discloses the claimed system, including the GRE packet sequence number, the PCF system stores packet data, which is transmitted from a Packet Data Service Node (PDSN) to the hybrid mobile terminal, sequentially in the dormant queue (In Grilli et al. reference, Fig. 5 that shows the layout of a transmit buffer where the packets are saved sequentially prior to transmission to the access network; paragraph 0050, lines 6-11 disclose the same details; in Yao reference, Fig. 2 that shows a Secondary Queue 214 with capability to store the same data that is stored in the Transmit Queue 212; column 10, lines 34-46 and column 12, lines 32-46 which disclose that when the transmitter receives a NAK (Negative Acknowledgement) message from the receiver, identifying any packets that were not received successfully, packet copies held in the dormant queue are retransmitted at least once more, thereby disclosing that such packets were saved in the secondary queue when the handoff occurred).

However, Turner as modified by Grilli et al. and Yao, does not disclose receiving a link release message.

In the same field of endeavor, Park et al. disclose receiving a link release message (in Park et al. reference, Fig. 5C, event arrows 519, 520 and 522; column 10, lines 10-17 which disclose that when the radio link fails, the source RNC 31 (shown in Fig. 5A) requests the source BTS 21 to release the radio link).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a system, wherein upon receipt of the link release message including the GRE packet sequence number, the PCF system stores packet data, which is transmitted from a Packet Data Service Node (PDSN) to the hybrid mobile terminal, sequentially in the dormant queue, as taught by Park et al., in the wireless mobile network system of Turner, as modified by Grilli et al. and Yao, so as to provide capability to transmit data from the secondary queue in which it is stored during the handoff transition period.

Consider **claim 6**, and **as it applies to claim 5 above**, Turner as modified by Grilli et al. and Yao, further shows and discloses the claimed method, including releasing the link with the access network (In Grilli et al. reference, Fig. 2 that shows packets 204(A), 204(B) and 204(C) with sequence numbers (BSR_ID) added to them; paragraph 0047, lines 22-24 which disclose the same details; Fig. 5 that shows the layout of a transmit buffer where the packets are saved sequentially prior to transmission to the access network; paragraph 0050, lines 6-11 disclose the same details).

However, Turner as modified by Grilli et al. and Yao, does not disclose transmitting by the PCF system, a link release complete signal for completing release of a link with the access network when receiving a link release signal including a GRE sequence number.

In the same field of endeavor, Park et al. disclose transmitting by the PCF system, a link release complete signal for completing release of a link with the access network when receiving a link release signal including a GRE sequence number and then releasing the link with the access network (in Park et al. reference, Fig. 5C, event arrows 519, 520 and 522; column 10, lines 10-17 which disclose that when the radio link fails, the source RNC 31 (shown in Fig. 5A) requests the source BTS 21 to release the radio link, whereupon the source BTS 21 transmits a radio link release response message to the source RNC).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a system, transmitting by the PCF system, a link release complete signal for completing release of a link with the access network when receiving a link release signal including a GRE sequence number and then releasing the link with the access network, as taught by Park et al., in the wireless mobile network system of Turner, as modified by Grilli et al. and Yao, so as to provide capability to transmit data from the secondary queue in which it is stored during the handoff transition period.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Turner (U.S. Patent Application Publication # 2003/0152049 A1)**, in view of **Grilli et al. (U.S. Patent Application Publication # 2004/0037245 A1),** and further in view of **Yao (U.S. Patent Publication # 6,731,647 B2),** and further in view of **Chikuma et al. (U.S. Patent Publication # 6,947,435 B1).**

Consider **claim 7**, and **as it applies to claim 5 above**, Turner as modified by Grilli et al. and Yao, shows and discloses the claimed method, except the step of destroying by the PCF system, the active queue after storing packet data of the active queue in the dormant queue.

In the same field of endeavor, Chikuma et al. show and disclose the claimed method, including the step of destroying by the PCF system, the active queue after storing packet data of the active queue in the dormant queue (Fig. 23 that disclose a step for clearing data from buffer after it has been transmitted to the mobile terminal, thereby disclosing destruction of transmitted data from the active queue; column 19, lines 10-13 that disclose the same details).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a mechanism, wherein upon receipt of the link release message including the GRE packet sequence number, the PCF system transfers packet data, corresponding to a sequence number appointed by the GRE packet sequence number, from among data for the hybrid mobile terminal stored in the active queue, and/or packet data subsequent to said packet data corresponding to the

sequence number, to the dormant queue, and then destroys the active queue, as taught by Chikuma et al., in the wireless mobile network method of Turner, as modified by Grilli et al. and Yao, so as to reduce the storage requirement for both an active and a dormant queue.

Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Turner (U.S. Patent Application Publication # 2003/0152049 A1)**, in view of **Yao (U.S. Patent Publication # 6,731,647 B2),** and further in view of **Grilli et al. (U.S. Patent Application Publication # 2004/0037245 A1),** and further in view of **Park et al. (U.S. Patent Publication # 6,892,071 B2),** and further in view of **Cheng et al. (U.S. Patent Application Publication # 2004/0246917 A1).**

Consider **claim 9**, Turner shows and discloses a system in a mobile network for High Rate Pack Data (HRPD) communication for transmitting packet data when inter-system handoff occurs between a mobile network for HRPD communication and a mobile network for voice communication (Abstract; Fig. 1; paragraph 0010 that discloses a system in a mobile network including base station (BS) 106, Wireless Communication Device (WCD) 102, and a computer/client 104, connected to Network 108 that is linked to voice communication system 110, and HRPD communication 112; the described system being capable of inter-system handoff between a voice network and a high packet rate data network), said system comprising:

a hybrid mobile terminal capable of communicating with both the mobile networks (Mobile terminal WCD 102 shown in Fig. 1 and described in paragraphs 0010 and 0041-0043).

However, Turner does not disclose an access network for converting a Generic Routing Encapsulation (GRE) packet data received from a Packet Control Function (PCF) system to a Radio Link Protocol (RLP) packet, storing the RLP packet after adding a GRE packet sequence number to the RLP packet, and transmitting the RLP packet to the hybrid mobile terminal; and creating a link release message including the GRE packet sequence number of a GRE packet that has not been transmitted to the hybrid mobile terminal, upon detection of loss of an air link with the hybrid mobile terminal, and transmitting the created link release message to the PCF system.

In the same field of endeavor, Yao shows and discloses a system in a mobile network for converting a Generic Routing Encapsulation (GRE) packet data received from a Packet Control Function (PCF) system to a Radio Link Protocol (RLP) packet, storing the RLP packet, and transmitting the RLP packet to the hybrid mobile terminal (Fig. 2, processor 210 and transmit queue 212; column 10, lines 4-14 which disclose that processor 210 receives TCP frames and stores them in a buffer; the RLP frames are then generated from the stored TCP frames and placed in the transmit queue 212. Transmit queue is a storage device that stores RLP frames and transmits them to the hybrid mobile terminal; secondary queue 214 is used as a retransmission buffer; column 9, lines 66-67 and column 10, lines 1-3 which disclose that RLP frame comprises an RLP frame sequence number, an RLP frame type field, a data length field, and

information received from TCP frame; column 10, lines 4-17 that further disclose the details of the conversion of TCP packets into RLP packets).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide means for converting a Generic Routing Encapsulation (GRE) packet data received from a Packet Control Function (PCF) system to a Radio Link Protocol (RLP) packet, storing the RLP packet, and transmitting the RLP packet to the hybrid mobile terminal, as taught by Yao, in the wireless mobile network system of Turner, so as to provide proper packet format for wireless transmission of the received data and to provide capability to retransmit data based on the stored sequence number, in case an interruption in the data transmission occurs.

However, Turner as modified by Yao, does not disclose storing the RLP packet after adding a GRE packet sequence number to the RLP packet.

In the same field of endeavor, Grilli et al. show and disclose a system for wireless communication, wherein the RLP packets are stored after adding a GRE packet sequence number to the RLP packet (Fig. 2 that shows packets 204(A), 204(B) and 204(C) with sequence numbers (BSR_ID) added to them; paragraph 0047, lines 22-24 which disclose the same details; Fig. 5 that shows the layout of a transmit buffer where the packets are saved sequentially prior to transmission to the access network; paragraph 0050, lines 6-11 disclose the same details).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to store the RLP packet after adding a GRE packet sequence number to the RLP packet, as taught by Grilli et al., in the wireless mobile

network system of Turner, as modified by Yao, so as to provide proper packet format for wireless transmission of the received data and to provide capability to retransmit data from the queue in which it is stored, in case an interruption in the data transmission occurs.

However, Turner, as modified by Yao and Grilli et al., does not disclose creating a link release message including the GRE packet sequence number of a GRE packet that has not been transmitted to the hybrid mobile terminal, upon detection of loss of an air link with the hybrid mobile terminal, and transmitting the created link release message to the PCF system.

In the same field of endeavor, Park et al. disclose a system for wireless communication, wherein upon detection of loss of an air link with the hybrid mobile terminal, creating a link release message including the GRE packet sequence number of a GRE packet that has not been transmitted to the hybrid mobile terminal, and transmitting the created link release message to the PCF system (Fig. 5C, event arrows 519, 520 and 522; column 10, lines 10-17 which disclose that when the radio link fails, the source RNC 31 (shown in Fig. 5A) requests the source BTS 21 to release the radio link, whereupon the source BTS 21 transmits a radio link release response message to the source RNC).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a method for wireless communication, wherein upon detection of loss of an air link with the hybrid mobile terminal, creating a link release message including the GRE packet sequence number of a GRE packet that

has not been transmitted to the hybrid mobile terminal, and transmitting the created link release message to the PCF system, as taught by Park et al., in the wireless mobile network system of Turner, as modified by Yao and Grilli et al., so as to release resources for use by others, when the resources are no longer needed.

However, Turner, as modified by Yao, Grilli et al. and Park et al., does not disclose a system for including the GRE packet sequence number of a GRE packet that has not been transmitted to the hybrid mobile terminal.

In the same field of endeavor, Cheng et al. disclose a method for wireless communication, wherein when creating a link release message, to include the GRE packet sequence number of a GRE packet that has not been transmitted to the hybrid mobile terminal (Fig. 1; paragraph 0032, lines 17-24 that disclose unified sequence number or RLP sequence number may be used by target cell "b" to continue the new frame transmission after switching occurs).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a method for wireless communication, wherein when creating a link release message, to include the GRE packet sequence number of a GRE packet that has not been transmitted to the hybrid mobile terminal, as taught by Cheng et al., in the wireless mobile network system of Turner, as modified by Yao, Grilli et al. and Park et al., so as to be able to synchronize transmitted data before and after handoff without any loss of packets.

Consider **claim 10**, and **as it applies to claim 9 above**, Turner as modified by Yao, Grilli et al., Park et al. and Cheng et al., further discloses the claimed system, wherein upon receipt of packet data from the system, the access network stores user data added with the GRE packet sequence number and an RLP header, so that they are matched together (In Yao reference, Fig. 2, processor 210 and transmit queue 212; column 10, lines 4-14 which disclose that processor 210 receives TCP frames and stores them in a buffer; the RLP frames are then generated from the stored TCP frames and placed in the transmit queue 212. Transmit queue is a storage device that stores RLP frames and transmits them to the hybrid mobile terminal; secondary queue 214 is used as a retransmission buffer; column 9, lines 66-67 and column 10, lines 1-3 which disclose that RLP frame comprises an RLP header including an RLP frame sequence number, an RLP frame type field, a data length field, and information received from TCP frame; column 10, lines 4-17 that further disclose the details of the conversion of TCP packets into RLP packets; in Grilli et al. reference, Fig. 2 that shows packets 204(A), 204(B) and 204(C) with sequence numbers (BSR_ID) added to them; paragraph 0047, lines 22-24 which disclose the same details; Fig. 5 that shows the layout of a transmit buffer where the packets are saved sequentially prior to transmission to the access network; paragraph 0050, lines 6-11 disclose the same details).

Consider **claim 11**, Turner shows and discloses a method for transmitting packet data from an access network to a hybrid mobile terminal capable of communicating with a mobile network for High Rate Pack Data (HRPD) communication and with a mobile

network for voice communication when inter-system handoff occurs between the two mobile networks (Abstract; Fig. 1; paragraph 0010 that discloses a method in a mobile network including base station (BS) 106, Wireless Communication Device (WCD) 102, and a computer/client 104, connected to Network 108 that is linked to voice communication system 110, and HRPD communication 112; the described method being capable of inter-system handoff between a voice network and a high packet rate data network).

However, Turner does not disclose a method for receiving, by the access network, packet data for transmission to the hybrid mobile terminal, converting the received packet data to Radio Link Protocol (RLP) data, storing the RLP data, Generic Routing Encapsulation (GRE) packet data and a GRE packet sequence number of the packet data prior to the conversion into the RLP data and an RLP sequence number in a retransmission buffer, and transmitting the received packet data to the hybrid mobile terminal according to an RLP protocol; and

when detecting air link loss during data transmission to the hybrid mobile terminal, by the access network, creating a link release message including a GRE packet sequence number of a GRE packet, which has not been transmitted to the hybrid mobile terminal, from among packet data stored in the retransmission buffer, and transmitting the created link release message to a Packet Control Function (PCF) system.

In the same field of endeavor, Yao shows and discloses a method for receiving, by the access network, packet data for transmission to the hybrid mobile terminal, converting the received packet data to Radio Link Protocol (RLP) data, storing the RLP

data, Generic Routing Encapsulation (GRE) packet data and a GRE packet sequence number of the packet data prior to the conversion into the RLP data and an RLP sequence number in a retransmission buffer, and transmitting the received packet data to the hybrid mobile terminal according to an RLP protocol (Fig. 2, processor 210 and transmit queue 212; column 10, lines 4-14 which disclose that processor 210 receives TCP frames and stores them in a buffer; the RLP frames are then generated from the stored TCP frames and placed in the transmit queue 212. Transmit queue is a storage device that stores RLP frames and transmits them to the hybrid mobile terminal; secondary queue 214 is used as a retransmission buffer; column 9, lines 66-67 and column 10, lines 1-3 which disclose that RLP frame comprises an RLP frame sequence number, an RLP frame type field, a data length field, and information received from TCP frame; column 10, lines 4-17 that further disclose the details of the conversion of TCP packets into RLP packets).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide means for receiving, by the access network, packet data for transmission to the hybrid mobile terminal, converting the received packet data to Radio Link Protocol (RLP) data, storing the RLP data, Generic Routing Encapsulation (GRE) packet data and an RLP sequence number in a retransmission buffer, and transmitting the received packet data to the hybrid mobile terminal according to an RLP protocol, as taught by Yao, in the wireless mobile network method of Turner, so as to provide proper packet format for wireless transmission of the received data and

to provide capability to retransmit data based on the stored sequence number, in case an interruption in the data transmission occurs.

However, Turner as modified by Yao, does not disclose a method for storing a GRE packet sequence number of the packet data prior to the conversion into the RLP data; and when detecting air link loss during data transmission to the hybrid mobile terminal, by the access network, creating a link release message including a GRE packet sequence number of a GRE packet, which has not been transmitted to the hybrid mobile terminal, from among packet data stored in the retransmission buffer, and transmitting the created link release message to a Packet Control Function (PCF) system.

In the same field of endeavor, Grilli et al. show and disclose a method for storing a GRE packet sequence number of the packet data prior to the conversion into the RLP data (Fig. 2 that shows packets 204(A), 204(B) and 204(C) with sequence numbers (BSR_ID) added to them; paragraph 0047, lines 22-24 which disclose the same details; Fig. 5 that shows the layout of a transmit buffer where the packets are saved sequentially prior to transmission to the access network; paragraph 0050, lines 6-11 disclose the same details).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to store the RLP packet after adding a GRE packet sequence number to the RLP packet, as taught by Grilli et al., in the wireless mobile network method of Turner, as modified by Yao, so as to provide proper packet format for wireless transmission of the received data and to provide capability to retransmit

data from the queue in which it is stored, in case an interruption in the data transmission occurs.

However, Turner, as modified by Yao and Grilli et al., does not disclose a method when detecting air link loss during data transmission to the hybrid mobile terminal, by the access network, creating a link release message including the GRE packet sequence number of a GRE packet that has not been transmitted to the hybrid mobile terminal, from among packet data stored in the retransmission buffer, and transmitting the created link release message to a Packet Control Function (PCF) system.

In the same field of endeavor, Park et al. disclose a method for wireless communication, wherein when detecting air link loss during data transmission to the hybrid mobile terminal, by the access network, creating a link release message including the GRE packet sequence number of a GRE packet that has not been transmitted to the hybrid mobile terminal, from among packet data stored in the retransmission buffer, and transmitting the created link release message to a Packet Control Function (PCF) system (Fig. 5C, event arrows 519, 520 and 522; column 10, lines 10-17 which disclose that when the radio link fails, the source RNC 31 (shown in Fig. 5A) requests the source BTS 21 to release the radio link, whereupon the source BTS 21 transmits a radio link release response message to the source RNC).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a method for wireless communication, wherein when detecting air link loss during data transmission to the hybrid mobile terminal, by the access network, creating a link release message including the GRE

packet sequence number of a GRE packet that has not been transmitted to the hybrid mobile terminal, from among packet data stored in the retransmission buffer, and transmitting the created link release message to a Packet Control Function (PCF) system, as taught by Park et al., in the wireless mobile network method of Turner, as modified by Yao and Grilli et al., so as to release resources for use by others, when the resources are no longer needed.

However, Turner, as modified by Yao, Grilli et al. and Park et al., does not disclose a method for including the GRE packet sequence number of a GRE packet that has not been transmitted to the hybrid mobile terminal, from among packet data stored in the retransmission buffer.

In the same field of endeavor, Cheng et al disclose a method for wireless communication, wherein when creating a link release message, to include the GRE packet sequence number of a GRE packet that has not been transmitted to the hybrid mobile terminal, from among packet data stored in the retransmission buffer (Fig. 1; paragraph 0032, lines 17-24 that disclose unified sequence number or RLP sequence number may be used by target cell "b" to continue the new frame transmission after switching occurs).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a method for wireless communication, wherein when creating a link release message, to include the GRE packet sequence number of a GRE packet that has not been transmitted to the hybrid mobile terminal, from among packet data stored in the retransmission buffer, as taught by Cheng et al.,

in the wireless mobile network method of Turner, as modified by Yao, Grilli et al. and Park et al., so as to be able to synchronize transmitted data before and after handoff without any loss of packets.

Conclusion

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Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Kishin G. Belani whose telephone number is (571) 270-1768. The Examiner can normally be reached on Monday-Thursday from 6:30 am to 5:00 pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, David Wiley can be reached on (571) 272-3923. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Kishin G. Belani
K.G.B./kgb

August 20, 2007

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